

The Effect of Pilates Exercises on Body Composition and Some Motoric Parameters in Adult Women

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Abstract

Aim: The purpose of this study is to search effects of pilates exercises on body composition and some motoric features in adult women

Material and Method: For the research, 16 female sedantery volunteers who reside in Sanliurfa participated. All the participants did in the movements built pilates exercises six weeks, 4 days a week, 2 hours a day. Attention was paid to the necessary warm-up protocols before exercises and cooling movements was done at the end of each exercise. Describing the importance of the study participants increased levels of motivation and desire. Of the subjects before and after exercise height (cm), body Weight (kg), horizontal and vertical jump (cm), disks Touch (sc), Biceps Skin fold thickness (mm), Triceps Skin fold thickness, Abdomen Skin fold thickness measurements were made of.

Findings: The mean age of the subjects: $25,86 \pm 1,64$ (years), the mean height: $168,13 \pm 2,79$ (cm), was found to be. Subjects' body weight pre- test values: $75,55 \pm 13,14$ (kg), post-test values: $72,19 \pm 12,92$ (kg), statistically significant difference was found ($p < 0,01$). Participants' horizontal Jump pre-test values: $83,84 \pm 6,24$ (cm), post-test values: $87,56 \pm 6,57$ (cm), vertical jump pre- test values: $33,16 \pm 4,78$ (cm) post-test values: $36,64 \pm 3,50$ (cm), reaction Time pre- test values: $12,45 \pm 1,39$ post-test values: $11,47 \pm 1,21$, Biceps (Skin fold thickness), pre- test values: $22,54 \pm 3,03$ (mm) post-test values: $21,14 \pm 5,14$ (mm), Triceps (Skin fold thickness), pre- test values: $31,90 \pm 4,63$ (mm) post- test values: $29,18 \pm 5,14$ (mm), Abdomen (Skin fold thickness), pre- test values: $28,14 \pm 4,70$ (mm) post-test values: $24,77 \pm 4,37$ (mm) the statistical significance was observed.

Result: Pilates exercises can say that the healing effect sedentary adult women's body composition and horizontal-vertical jump and arm movement is thought to be the effect of rapid motoric developer

KEYWORDS: Pilates, motoric, sedentary, exercise

INTRODUCTION

The most efficient exercise types regarding their health risks are the ones expanding the aerobic capacity such as walking, jogging, mountain hiking, cycling and boating. It is possible to obtain high efficiency through aerobic exercises in order to overcome health problems especially like obesity, cardiovascular disorders and deformation of bones (Zorba, 1999). At later ages, physical capacity is close to threshold value and minimal decreases can negatively affect daily activities like standing up. Doing

physical exercises is a good way to prevent such kind of undesirable situations. It is possible to expand physical capacity through physical activities even at later ages (Çetin, 2002). Pilates exercise has become popular in recent years especially with the media support. On the other hand, several scientific studies have been conducted by exercise scientists. The effects of Pilates based exercises on muscular activation has been analyzed along with their effects on motor skills like flexibility and balance (Anderson, 2009). Pilates exercises can be defined as exercises which enhance central muscular health by strengthening muscles with a contraction, strengthen body muscles, increase musculoskeletal entireness and maintain joint stabilization through spine mobility (Richardson & Jull, 1995). The research conducted in this area mostly investigates the effect of pilates method of exercise on coordinative motor skills like strength, flexibility, endurance, velocity and agility (Şimşek & Katırcı, 2011).

The purpose of this study is to investigate effect of pilates exercises on some body composition and motoric parameters in adult sedentary women and to put forward suggestions according to the results.

MATERIAL AND METHOD

16 sedentary female residing in Şanlıurfa with no sports background participated in the study voluntarily. All the participants took pilates exercise particularly floor exercises over the course of 6 weeks as 4 days in a week and 2 hours a day. All the necessary warm-up exercises were practised before the exercises and at the end of each exercise, cooling down exercises were practised. The participants were told about the importance of the study to increase the level of motivation.

Measurements taken;

Height measurement: Height of the participants were measured with a digital height measurement tool with a precision of 0.01 cm

Body Weight: Body weight was measured through a scale with a 0.1 kg precision.

Vertical Jump Test: The measurement was taken using a vertical jump board. The highest point the fingertips reached was marked and recorded after both arms moved upwards while keeping the feet flat and while standing. Afterwards, the subject leapt upwards as high as possible using both feet and touched the board. The subject didn't use a countermovement and bended the knees 90 degrees. This process was repeated three times and the best result was recorded.

Horizontal Jump Test: The subjects were asked to jump forward on two legs without stepping on the starting line. The distance between the starting line and the spot that the body reached last was measured. The feet were watched not to take off before jump.

Plate Tapping Tests: The subject tries to tap two discs with the preferred hand and in turn as quickly as possible. Two plastic discs are placed with 20 cm diameters on the table. The distance between the centres of the discs is adjusted to 80 cm (the borders are 60 cm). The rectangle with a 30x20 cm size is placed equidistant between both discs. The best result is taken as the score. The score is the time spent to tap 25 full cycles (50 taps) and recorded as one tenth of a second.

Skin fold Measurements: *Skin fold (subcutaneous adipose tissue thickness) measurements:* In order to find out the percentage of body fat, a Holtain skin fold calliper which provides a constant pressure of 10 g/sq. mm was used. Measurements were taken on the right side while the subject is standing and from the biceps, triceps, abdominal, suprailliac, leg and subscapula. . (Tamer 2000, Cicioğlu et al.1998)

Statistical Analysis: SPSS- 16 packaged software was used to process the data obtained from the measurements. Paired sample T-test was used to compare the pre-test and post test values of the subjects. The level of significance was chosen to be 0.05 and 0.01.

FINDINGS

Mean age of the subjects was $25,86 \pm 1,64$ (years), mean height $168,13 \pm 2,79$ (cm). Pre-test mean of the body weight was $75,55 \pm 13,14$ (kg), post-test mean was $72,19 \pm 12,92$ (kg), which was found statistically significant ($p < 0,01$). Vertical Jump pre-test values of the subjects in the research was $83,84 \pm 6,24$ (cm) post test values: $87,56 \pm 6,57$ (cm), Horizontal Jump pre- test values: $33,16 \pm 4,78$ (cm) post test values: $36,64 \pm 3,50$ (cm), Flexibility pre-test values: $27,26 \pm 4,78$ (cm), post-test values: $29,80 \pm 4,72$ (cm), Reaction Time pre-test values: $12,45 \pm 1,39$ post-test values: $11,47 \pm 1,21$, Biceps DKK pre- test values: $22,54 \pm 3,03$ (mm) post-test values: $21,14 \pm 5,14$ (mm), Triceps DKK pre-test values: $31,90 \pm 4,63$ (mm) post-test values: $29,18 \pm 5,14$ (mm), Abdomen DKK pre-test values: $28,14 \pm 4,70$ (mm) post-test values: $24,77 \pm 4,37$ (mm), Subscapula pre-test values: $21,36 \pm 4,27$ (mm) post-test values: $18,67 \pm 3,50$ (mm), Suprailliac pre-test values: $26,92 \pm 3,80$ (mm) post-test values: $21,07 \pm 6,81$ (mm), in which statistically significant differences were observed ($p < 0,01$).

Table 1: Means of Anthropometric Measurements of the Subjects

Variables	N	Pre Test (XX/SS)	Post Test (XX/SS)	t	P
Age (years)	15	$25,86 \pm 1,64$	-	-	-
Height (cm)	15	$168,13 \pm 2,79$	-	-	-
Weight (kg)	15	$75,55 \pm 13,14$	$72,19 \pm 12,92$	2,92	0,01

Table 2: Comparison of the Means of Some Body Composition and Motoric Parameters' Measurements of the Subjects

Variables	N	Pre Test (xx/ss)	Post Test (xx/ss)	t	P
Vertical Jump (cm)	15	$83,84 \pm 6,24$	$87,56 \pm 6,57$	-3,57	0,01
Horizontal Jump (cm)	15	$33,16 \pm 4,78$	$36,64 \pm 3,50$	-3,26	0,01
Flexibility (cm)	15	$27,26 \pm 4,78$	$29,80 \pm 4,72$	-4,396	0,01

Reaction Time (sec)	15	12,45 ± 1,39	11,47 ± 1,21	2,92	0,01
Biceps DKK (mm)	15	22,54 ± 3,03	21,14 ± 5,14	18,90	0,01
Triceps DKK (mm)	15	31,90 ± 4,63	29,18 ± 5,14	30,09	0,01
Abdomen DKK (mm)	15	28,14 ± 4,70	24,77 ± 4,37	45,31	0,01
Subscapula (mm)	15	21,36±4,27	18,67±3,50	5,218	0,01
Suprailliak (mm)	15	26,92±3,80	21,07±6,81	4,708	0,01

DISCUSSION

Mean age of the subjects was 25, 86 ± 1,64 (years), mean height 168,13±2,79 (cm). Pre-test mean of the body weight was 75,55 ± 13,14 (kg), post-test mean was 72,19 ± 12,92 (kg), which was found statistically significant ($p < 0,01$). Biceps DKK pre-test values of the subjects were 22,54 ± 3,03 (mm) post-test values: 21,14 ± 5,14 (mm), Triceps DKK pre-test values: 31,90 ± 4,63 (mm) post-test values: 29,18 ± 5,14 (mm), Abdomen DKK pre-test values: 28,14 ± 4,70 (mm) post-test values: 24,77 ± 4,37 (mm), Subscapula pre-test values: 21,36±4,27 (mm) post-test values: 18,67±3,50 (mm), Suprailliak pre-test values: 26,92±3,80 (mm) post-test values: 21,07±6,81 (mm), in which statistically significant differences were observed ($p < 0,01$).

Body composition is accepted as an important determinant to have particular physical characteristics and to reach optimum capacity of physical performance in terms of body size, composition and structure apart from being one of the key indicators of individual's health and physically well being (Açıkada, 1990; Boileau & Horswill, 2000; Heyward, 1998). Body fat percentage is higher in women compared to men. As a result of the gender, women have the highest fat percentage in hip and calf regions. As a result of regularly conducted exercises, a decrease in thickness of subcutaneous fat and an increase in fat-free muscle mass can be expected (Zorba & et. al., 2000). In the research conducted by Amano et. al in which obese males and females took exercises over the course of 12 weeks as 3 days a week and 30 minutes a day, body weight of the subjects was found to be 74,1±2,6 before the test, and was 70,3±2,9 (kg) after the test, which was found statistically significant (Amano et. al., 2001). Jago et. al stated that significant decreases were observed in BMI values of the women taking pilates exercises 4 days a week (Jago & et al., 2006). In the research conducted by Çolakoğlu and Karacan in order to investigate effects of aerobic exercises on some physiological parameters in young and middle aged females, body weight pre-test value of middle aged females was 81,57 ± 11,20 (kg) post test: 76,29±10,40 (kg); pre-test value of young females was 68,26±11,72 (kg), post test: 68,69±10,65 (kg) which they found statistically significant (Çolakoğlu & Karacan, 2006).

Regarding the effects of regularly conducted exercises on body composition, body composition values we obtained from our research show similarities with the data in literature.

Reaction Time pre-test values of the subjects in the research was $12,45 \pm 1,39$ (sec), post test values: $11,47 \pm 1,21$ (sec), Flexibility pre-test values: $27,26 \pm 4,78$ (cm), post-test values: $29,80 \pm 4,72$ (cm), Vertical Jump pre-test values: $83,84 \pm 6,24$ (cm) post-test values: $87,56 \pm 6,57$ (cm), Horizontal Jump pre-test values: $33,16 \pm 4,78$ (cm) post test values: $36,64 \pm 3,50$ (cm), which were all found statistically significant at the level of ($p < 0,01$).

Basic motoric features develop over the course of a natural change period even though individuals do not take exercises regularly. Developing motoric features cannot be disassociated from the stimulus provided by the exercises. In other words, providing stimulus and affecting the development of basic motoric features is only possible through sports overload (Sevim, 1991). Pilates exercise is a perfect way to shape the body and to strengthen small muscles without inflating. Pilates is a kind of exercise system which restores posture, balance and helps us to be aware of our body. Besides, it enables not only to burn fat and develop muscles for the appearance but also to move with less effort and develop velocity (Essam & Manal, 2011). In the research conducted by Çolakoğlu and Karacan in order to investigate effects of aerobic exercises on some physiological parameters in young and middle aged females, vertical jump pre-test values of middle aged females was $16,02 \pm 4,88$ (cm) post test: $20,24 \pm 4,82$ (cm); pre-test vertical jump values of young females was $20,86 \pm 4,13$ (cm), post test: $24,65 \pm 3,67$ (cm) (kg) which they found statistically significant (Çolakoğlu & Karacan, 2006).

We observed that the results we obtained from our research show similarities with the results of the studies in literature.

As a result, it is possible to state that pilates exercises have positive effects on velocity of the arms (tapping the plates), vertical- horizontal jump and body composition in young sedentary females. This particular sport is advised especially for housewives since they can do it at home freely and develop their body composition.

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